



BACKGROUND.....

Strategic decisions:

- Use main stream industry solutions.
- Use AUTOSAR data exchange format
- Use pure standard, avoid inventing competing solutions
- Enhancements/adjustments to be propsed to the standard.



ENSURE COMPETITION BETWEEN AUTOSAR IMPLEMENTORS

At 1:st project start, 2008.

- Number of BSW suppliers => 6
- BSW and config tool maturity => low to medium.
- System design tool maturity => low

Today

- #BSW implementations => 7 of 8(+) known
- BSW and config tool maturity => medium to high
- System design tool maturity => medium
- New tools showing up on the market for e.g. timing analysis.









ELECTRONIC DATA EXCHANGE



SW COMPONENT TEMPLATE



VFB level: communication realtionship

RTE level: which executable to react on communication

Implementation level: which code to be used by the executable.



HW RESOURCE TEMPLATE / MACHINE MANIFEST

Allows to describe an ECU based on modeling elements

- HW element (e.g. MicroController, SensorActuator)
- HW connection
- HW pin group (e.g. CommunicationPort)
- HW pin

Those modeling elements can be used to describe an ECU/Machine as a hierachical composition.

SYSTEM RELATED ELECTRONIC DATA EXCHANGE

AUTOSAR System

Generator

SW-Components

ECU Resource

System Constraints

Topology •which ECUs •how connected

Software •which Application SW-C

•(optional) Communication • Communication Matrix • Frames, Signals, Timing • Gateway tables

(optional) Mapping

if already defined

- which SW-C on which ECU
- Which data in which Frame/Signal

Mapping Constraints

 what must be mapped together, what separated etc







COMMUNICATION MATRIX DESIGN / SERVICE INSTANCE MANIFEST

Mapping





COMMUNICATION RELATED DATA EXCHANGE





DIAGNOSTICS RELATED DATA EXCHANGE



Compliance (to what and to which extent) ?

- AUTOSAR version R4.0.2/R4.0.3/R4.1.1 ?
- "Fully and exactly" or "limited and close enough" ?

Bugs?

- Relevant for VCC, in implementation and specification ?
- Formal AUTOSAR or "project driven" Quick fix ?





Issuer: Daniel Svensson Dept. 94142; Presentation name: Electronic data exchange in Automotive

LESSONS LEARNED

Electronic data exchange does not solve everything.

Integration skills are still needed.

Manual configuration is not the best choice.

Configurability of functionality is nice, but complicates testing. AUTOSAR reduces specification efforts for new infrastructure. Required ECU performance often under estimated. Do it the standardised way, don't cheat.....





